

CITY OF MURFREESBORO STORM WATER ADVISORY COMMITTEE

Tuesday, April 8, 2008
City Council Chambers
111 Vine Street, Murfreesboro
11:45 AM
(Lunch available at 11:30)

A G E N D A

1. Consider minutes from the March 11, 2008, meeting
2. Presentation of post-construction runoff control ordinance
 - a. Major provisions and stakeholder meeting comments
 - b. Review of proposed ordinance language
3. Opportunity for public comment
4. Other business
5. Adjourn

MINUTES
STORM WATER ADVISORY COMMITTEE
March 11, 2008

The Storm Water Advisory Committee met on March 11, 2008 in the Council Chambers at City Hall. Present at the meeting were Voting Committee members: Ron Crabtree, Beth Chesson, Wayne Belt, Richard Lewis and Timothy Haggard. Non-voting Committee members present were: Darren Gore and Susan McGannon. Also present were Robert Haley, Jay Bradley, Mark Lee, Sam Huddleston, Cey Chase, Donnie Steele, Joe Kirchner, Keith Carpenter, Bruce Ross, Michele Pinkston and Betsy Davidson.

The minutes from the meeting of September 18, 2007 were presented for corrections and/or deletions. A motion was made by Mr. Timothy Haggard and seconded by Richard Lewis to approve the minutes as presented. The motion was unanimously adopted.

Mr. Robert Haley gave a slide presentation on the Post-Construction Runoff Control Requirements and federal regulations to educate the Committee on the best management practices associated with typical post-construction runoff programs. A post-construction ordinance or other regulatory mechanism is required as one of the City of Murfreesboro's storm water permit milestones.

The post-construction runoff control program is about long term as opposed to construction phase protection of streams. The stormwater runoff has effect on our streams. It increases impervious surface area, storm water volume, velocity and discharge of pollutants. Natural drainage systems are affected also and streamside vegetation. This can cause problems by changing the landscape, problems for the streams, increased chemical pollution, altered biological populations, degradation of the stream's habitat and increased stream temperatures.

Common pollutants in urban storm water include sediment nutrients, oxygen-demanding substances, pathogens, road salts, hydrocarbons, heavy metals and heat. Post-construction runoff control is about stopping this kind of grime and chemicals from washing off into the creeks.

The current requirements for a post-construction management in new and redevelopment projects are to develop, implement and enforce a program to address stormwater runoff; those disturbing one acre or more.

Mr. Haley also presented a table showing the stormwater design standards in some of the other Middle Tennessee communities. Clarksville, Franklin and Nashville have used total suspended solids as the primary parameter to control their quality standards.

Ms. Beth Chesson suggested including an impervious area threshold along with site area criteria for which sites to regulate.

She also agreed that maintenance is one of our biggest challenges. It is imperative to have the BMP installed correctly and maintained professionally. The engineering community should also certify the BMPs have been installed correctly as per the agreed plans. There should be a long term maintenance plan, not just the operations and maintenance agreement, coupled with a BMP location map, general schematics of that BMP and inspection queries including how long it needs to be inspected or maintained.

Mr. Darren Gore presented the post-construction stormwater quality standards implementation schedule. The primary element associated with SWAC participation in achieving this goal, is receiving a recommendation at its April meeting to take to the City Council.

There will be a Stakeholder meeting to discuss stormwater fee credits and post-construction stormwater quality standards. Relevant stakeholders are encouraged to attend either the March 25, 2008 meeting at 11:00 a.m. or March 26, 2008 at 6:00 p.m.

The workshop will also review the level of design expected on stormwater fee credit applications, and some practical examples.

In preparation for the workshop, there is an online Stormwater Planning and Low Impact Design Guide which is considered more of a non-structural best management practices and also the Stormwater Control Manual which is more a structural best management practices. These were put in place when the credits to the stormwater fee were initiated.

Mr. Gore explained the workshop would be reviewing some very practical applications that need to be achieved to meet the criteria. While the various items are a requirement under the post-construction regulations, they would also be a credit on the stormwater fee. If these are implemented and maintained and operated appropriately, there would be a benefit with regards to receiving up to a 40% credit on the stormwater fee.

Timothy Haggard announced he will be resigning from the Storm Water Advisory Committee, effective after this meeting. He has taken a position as a consulting engineer and feels there might be a conflict of interest, so he is leaving for this reason.

There being no further business, the meeting was adjourned.

Ron Crabtree, Chairman

Murfreesboro Proposed Post-Construction Stormwater Runoff Management Standards

A. Runoff Quality Standard – 80% TSS Reduction

Due to federal and state water quality mandates, new development and redevelopment projects must provide for permanent stormwater management controls designed to remove at least 80% of the average annual load of total suspended solids (TSS) in post-construction runoff. The treatment standard will apply on new or redevelopment projects involving one or more acres of land and the construction of 10,000 square feet or more of impervious surface.

The City's Stormwater Planning and Low Impact Development (LID) Design Guide and Stormwater Controls Manual (see References section below for web address) include planning and design guidelines, design criteria for stormwater controls, and worksheets and examples showing how to design for 80% TSS reduction. A number of controls are shown in the table below. The 80% reduction applies to the runoff from the first 1.2 inches of rainfall onto the site.

The City stormwater program presumes that the treatment efficiencies listed for each control will be achieved. Some controls do not achieve 80% reduction and must be used in series (treatment train) with another control.

Structural Stormwater Control Removal Efficiency for Total Suspended Solids (TSS)	
Structural Control	TSS Removal (%)
General Application Structural Controls	
Stormwater Pond	80
Stormwater Wetland	80
Bioretention Area	80
Surface Sand Filter	80
Water Quality Swales	80
Limited Application Structural Stormwater Controls	
Filter Strip	50
Grass Channel	50
Organic Filter	80
Underground Sand Filter	80
Infiltration Trench	80
Gravity (Oil-Grit) Separator	40
Proprietary Structural Control	Based on Testing
Dry Detention/Dry ED Basin	60
Perimeter Sand Filter	80

B. Stream Bank Protection (SPv) Standard

High rates of runoff from new development need to be controlled in order to prevent erosion of channels and stream banks. This is a water quantity and water quality issue. This involves control of peak discharge rates to pre-development rates for 2-year and 10 year storm events and stream bank protection control. The facility size requirement for stream bank protection is similar to that for the 2 year and 10 year peak discharge control, and overall less than that for 25-year or 100-year peak discharge control required in other middle Tennessee communities.

The City envisions three options for streambank protection control:

- a) put in place controls such that runoff from a 1 year, 24 hour storm event (3.11 inches) is released at a rate that will extend the discharge time period to 24 hours; or
- b) provide a hydrologic analysis from an engineer which satisfactorily proves to the City that the downstream effects of runoff from the site in the 1 year storm will not impact channel integrity; or
- c) for sites of less than one acre (43,560 square feet) of impervious area, incorporate low impact design features on site, e.g., create below-grade landscaping areas to collect stormwater from impervious surfaces; the landscaping/vegetated area/porous pavement must retain the water quality volume generated by the site.

C. Residential Subdivision Water Quality & Streambank Protection Alternate Design Standard

Extended detention must be utilized by residential subdivisions for containing and releasing the streambank protection volume (SPv) over a twenty-four hour period and limiting the 2- and 10-yr storm peak discharges to pre-development conditions. Wet extended detention - maintaining a permanent pool equal to 50% of the water quality volume (WQv) - will meet the 80% total suspended solids (TSS) removal of the WQv; however, **dry** extended detention will not achieve 80% TSS removal for the WQv. As an alternative accepted design, the City shall recognize **dry** extended detention as adequate treatment when used in conjunction with grass lined channels achieving WQv pretreatment.

The length of grass channel shall be sized from a catchment's stormwater discharge outlet to the extended dry detention pond. Cumulative lengths of grass lined channel will be attributed as meeting pretreatment goals between and within each catchment area prior to discharging into the detention pond, as applicable. The following table summarizes the necessary length of grass lined channel to meet pretreatment goals on a *per acre basis*:

Grass Channel Sizing Criteria			(Claytor & Schueler, 1996)	
Parameter	<= 33% Imperviousness		Between 34% & 66% Imperviousness	
Slope (max 4%)	< 2%	>= 2%	< 2%	>= 2%
Grass channel minimum length (ft.)	25	40	30	45

Note 1: Minimum 2' wide bottom grass lined channel

Note 2: Catchment areas greater than 1 Ac., multiply length by actual acreage

It is expected that these stormwater facilities will be owned and maintained by homeowners' associations.

D. Hot Spot Priority Area Standards

Certain properties or activities by their nature produce relatively high concentration of oils, greases, soaps, nutrients or solids. Such developments, regardless of size, may be required to incorporate stormwater quality controls, appropriate to the activity, on site. Our proposal includes the following:

Lawn, tree or garden service centers; commercial greenhouse or nursery	Automotive dismantlers and recyclers, scrap metal processors, scrap yards
Dry cleaning establishments	Automobile service station
Strip malls	Automobile body shop, service center
Motor vehicle sales	

In addition to, or in lieu of partial TSS treatment, certain hot spot priority areas will need chemical or oil and grease controls in place.

E. Maintenance Plans and Agreement

As required in the current stormwater management ordinance, the property developer/owner must develop a stormwater controls maintenance plan. The plan must include diagrams, easements, and planned inspection and maintenance checklists. The plan will need to be submitted to, and approved by, the City prior to release of the building construction permit(s). A maintenance and monitoring agreement must be submitted, approved, and recorded with the land records. This ensures that knowledge of the stormwater controls will be maintained with the property. The agreement will include, or reference, the maintenance plan.

References

The City web page includes links
to the Design Guide and Control Manual, and
to the stormwater fee credit application and guidance.

http://www.murfreesborotn.gov/government/water_sewer/stormwater.htm

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March 25, 2008
Rev. April 2, 2008